Photon Ledger Insert

Origin

- In the Big Flash, photons were born alongside electrons and protons in the primordial plasma.
- They scattered constantly, trapped in a fog of free charges.

Recombination (~380,000 years)

- Electrons bound with nuclei to form the first hydrogen atoms.
- This binding ended scattering: photons decoupled and began to travel freely.
- These freed photons form the Cosmic Microwave Background (CMB) we measure today.

Ledger Reading

- Pre-recombination: Photon Exchange (PE) dominated — scattering kept the universe opaque.
- Post-recombination: Charge Potential (CP) outweighed PE — binding opened the lattice to transparency.
- Photon freedom marked the first readable page of the hydrogen cycle.

Maxim

Photons are hydrogen's first memory, freed when balance outweighed scatter. Light itself is the ledger of the cycle.